In the Claims:

1. **(Original)** A method of treating multiple sclerosis, the method comprising administering to a subject in need thereof a therapeutically effective amount of a compound, said compound having: (a) a combination of molecular weight and membrane miscibility properties for permitting said compound to cross the blood brain barrier of the organism; (b) a readily oxidizable chemical group for exerting antioxidation properties; and (c) a chemical make-up for permitting said compound or its intracellular derivative to accumulate within the cytoplasm of cells.

2. **(Currently Amended)** The method of claim 1, wherein said compound is ~~selected from the group consisting of N-acetyl cysteine ethyl ester (compound A), β,β-dimethyl cysteine ethyl ester (compound B), N-acetyl β,β-dimethyl cysteine (compound C), Glutathione ethyl ester (compound D), N-acetyl glutathione ethyl ester (compound E), N-acetyl glutathione (compound F), N-acetyl α-glutamyl ethyl ester cysteinyl glycyl ethyl ester (compound G) N-acetyl α-glutamyl ethyl ester cysteinyl glycyl (compound H), N-acetyl glutathione amide (compound I),~~ N-acetyl cysteine amide (compound J) or an ester pro-drug thereof~~, N-acetyl β,β-dimethyl cysteine amide (compound K) and N-acetyl cysteine glycine amide (compound L)~~.

3. **(Original)** The method of claim 1, wherein said readily oxidizable chemical group is a sulfhydryl group.

4. **(Original)** The method of claim 1, wherein said chemical make-up is selected having an ester moiety which is removable by hydrolysis imposed by intracellular esterases.

5. **(Original)** The method of claim 4, wherein said ester moiety is selected from the group consisting of alkyl ester and aryl ester.

6. **(Original)** The method of claim 5, wherein said alkyl and aryl esters are selected from the group consisting of methyl ester, ethyl ester, hydroxyethyl ester, t-butyl ester, cholesteryl ester, isopropyl ester and glyceryl ester.

7. **(Currently Amended)** A method ~~of therapeutically or prophylactically~~ for treating ~~a subject against~~ multiple sclerosis in an individual in need thereof, the method comprising administering to the individual a therapeutically ~~or prophylactically~~ effective amount of N-acetyl cysteine amide (compound J) or an ester pro-drug thereof ~~an antioxidant compound, said antioxidant compound having: (a) a combination of molecular weight and membrane miscibility properties for permitting said compound to cross the blood brain barrier of the individual; (b) a readily oxidizable chemical group for exerting antioxidation properties; and (c) a chemical make-up for permitting said compound or its intracellular derivative to accumulate within brain cells of the individual~~.

8.-9. **(Canceled)**

10. **(Currently Amended)** The method of claim 7, wherein said ~~chemical make-up is selected having an~~ pro-drug comprises an ester moiety which is removable by hydrolysis imposed by intracellular esterases.

11. **(Original)** The method of claim 10, wherein said ester moiety is selected from the group consisting of alkyl ester and aryl ester.

12. **(Original)** The method of claim 11, wherein said alkyl and aryl esters are selected from the group consisting of methyl ester, ethyl ester, hydroxyethyl ester, t-butyl ester, cholesteryl ester, isopropyl ester and glyceryl ester.

13.-19. **(Canceled)**